#### INDEX TO VOL. X.

A DRENALIN, action on eyes of rabbits whose superior cervical ganglia are removed, xliv.

 effect of subcutaneous injection on eyes of cats whose sympathetic nerve is cut, or whose superior cervical ganglion is removed, xxxvii.

Albuminuria, relation to blood-pressure and pulse-pressure, xvi.

Alkaloids and salts, antagonism, 345.

Alloxuric bases in fever, 452. Anasthesia, ether, xxxvii.

Antagonism between alkaloids and salts. 345.
Antifermentative properties of salts related to decomposition-tension, 452.

Atomic volume, relation to solution-tension and physiological action, 290.

Atropine and pilocarpine, simultaneous action, 352.

ATWATER, W. O. Coefficients of digestibility and availability of the nutrients of food, xxx.

Availability of foods, xxx.

 $B^{\mathrm{AETJER},\ \mathrm{F.\ H.}}_{\mathrm{BAETJER},\ \mathrm{222.}}$  See GILMAN and

BARTLETT, F. H. On the variations of blood-pressure during the breathing of rarefied air, 149.

Blood, effect of altitude, xxxii.

muscular exercise, 384. Blood-corpuscles, counting, 384.

Blood-flow, blood-pressure, and pulse-pressure, xv.

Blood-pressure and pulse-pressure, related to kidney secretions, xvi.

Blood-pressure, in man, xiv, xv.

-, in rarefied air, 149.

, pulse-pressure, and velocity of bloodflow, xv.

Brown, O. H. Effects of certain salts on kidney excretion, with special reference to glycosuria, 378. Brown, O. H. See Nullson and Brown, 225, 335.

BRYANT, A. P., and R. D. MILNER. Experiments on the digestibility of vegetables, 81.

BUSCH, F. C., and C. VAN BERGEN. Suprarenal grafting in the kidneys of rabbits with survival of an animal after subsequent removal of the remaining suprarenal, xix.

CALCIUM, counteracts saline purgatives, 101.

Cane-sugar, not inverted in stomach by enzyme, xxi.

CANNON, W. B. The passage of different food-stuffs from the stomach, xvii.

CANNON, W. B. The emptying of the human stomach, xix.

CARLSON, A. J. The rate of the nervous impulse in the spinal cord and in the vagus and the hypoglossal nerves of the California Hagfish (Bdellostoma dombeys), 401.

Catalysis, affected by ions, 225, 335.

Cell, localization of potassium in, xliii.

Cerebro-spinal fluid in hydrocephalus, 111, Cerebrum, expressive motions after removal,

-, motor cortex in dog, xliii.

CHAMBERLAIN, J. S. See HAWK and CHAMBERLAIN, 269.

Ciliary movement, 419.

Circulation, model, xxiii

Contact irritability, without precipitation of calcium salts, 324.

CORIAT, I. H. The cerebro-spinal fluid in hydrocephalus, 111.

CUSHING, H. The delineation of the motor cortex in the dog, xhii.

CUTTER, W. D., and P. K. GILMAN. The survival of irritability in mammalian nerves after removal from the body, xi.

- DAWSON, P. M. Effect of intravenous infusion of sodium bicarbonate after severe hemorrhage, xxxv.
- Diabetes, respiration, 47.
  Digestibility, coefficients, xxx.
- Digestion, liver, xxxviii.
- ----, pancreas, xxxviii.
- —, tryptic, xxxix.

  Diuretics, with diet poor in salts, 362.
- EMBRYO, development affected by Röntgen rays, 222.
- development under simultaneous action of pilocarpine and atropine, 352.
- ERLANGER, J. A study of the errors involved in the determination of the bloodpressures in man, together with a demonstration of the improvements in the sphygmomanometer thereby suggested, xiv.
- ERLANGER, J., and D. R. HOOKEE. The relation between blood-pressure, pulse-pressure, and the velocity of blood-flow in man, xv.
- ERLANGER, J., and D. R. HOOKER. The relation of blood-pressure and pulse-pressure to the secretion of urine and to the secretion of albumin in a case of so-called physiological albuminum, xvi.
- Eye, reaction to light, 28.
- FATS, hydrolysis and synthesis by platinum black, 191.
- Fever, 444.
- FISCHER, M. H. Does an antagonism exist between alkaloids and salts?, 345.
- Foods, digestibility and availability, xxx. Frog, reaction to light, 28.
- FROTHINGHAM, C., Jr. See PORTER, FROTHINGHAM, and LADD, xvi.
- $G_{\mathrm{enzyme, \, xxi.}}^{\mathrm{ASTRIC}}$  juice, absence of inverting
- Gelatine, tryptic digestion, xxxix.
- GIBSON, R. B. See MENDEL and GIBSON, xxix.
- GIES, W. J. Improved cage and diet for use in metabolism experiments on dogs, xxii.
- GIES, W. J. See HAWK and GIES, XXVIII.
- GIES, W. J. See Posner and GIES, xxxi. GIES, W. J. See SEIFERT and GIES, 146.
- GILMAN, P. K. See CUTTER and GILMAN, xi.
- GILMAN, P. K., and F. H. BAETJER. Some effects of the Röntgen rays on the development of embryos, 222.

- Glands, self-digestion, xxxviii. Glycosuria, 378.
- Growth, affected by lecithin, 57.
- -, affected by Rontgen rays, 222.
- HALSEY, J. T. Concerning the formation of sugar from leucin, 220.
- HASKINS, H. D. The effect of diuretics on the urine, with a diet poor in salts, 362.
- HATAI, S. The effect of lecithin on the growth of the white rat, 57.
- HATCHER, R. A. See SOLLMANN and HATCHER, XXV.
- HAWK, P. B. Influence of rennin upon the digestion of the proteid constituents of milk, 37.
- HAWK, P. B. On the time-relations of proteid metabolism, 115.
- HAWK, P. B. On the influence of ether anæsthesia, xxxvii.
- HAWK, P. B. On the morphological changes in the blood after muscular exercise, 384.
- HAWK, P. B., and J. S. CHAMBERLAIN. A study of the variations in the course of the nitrogen, sulphate, and phosphate excretion, as observed in short periods following a small increase in the proteid ingested, 269.
- НАWK, Р. В., and W. J. GIES. The influence of hemorrhage on proteid catabolism, xxviii.
- Head holder for rabbits, xliii.
- Heart, co-ordination of ventricles, xvi.
- -, innervation, I.
- —, Molgula manhattensis (Verrill), I. Hemorrhage, effect of intravenous infusion
- of sodium bicarbonate, xxxv.

  —, effect on lymph, xxxi.
- , proteid metabolism, xxviii.
- HENDERSON, Y. Demonstration of working models of the circulation, xxiii.
- HOOKER, D. R. See ERLANGER and HOOKER, xv, xvi.
- HUNTER, G. W., JR. Notes on the heart action of Molgula manhattensis (Verrill), 1.
- Hype, I. H. Localization of the respiratory centre in the skate, 236.
- Hydrocephalus, cerebro-spinal fluid, 111.
- TRRITABILITY, contact, 324.
- \_\_\_\_, in nerves after removal from the body, xi.
- Indican, precursors, xxvii.
- Intravenous infusion after hemorrhage, xxxv.

- Ions, effect on decomposition of hydrogen peroxide by platinum black, 225, 335.
- —, effect on decomposition of hydrogen peroxide and hydrolysis of butyric ether by pancreas extract, 335.
- J ONES, W. On the enzyme of the suprarenal gland, xxv.
- JONES, W. On the enzyme of the thymus, xxiv.
- K EMP, G. T. Report of an expedition to Cripple Creek and Pike's Peak to study the effect of altitude on the blood, xxxii.
- Kidney, excretion of chlorides with diet poor in salts, 362.
- -, physical factors in secretion, xxv.
- -, secretion affected by salts, 378.
- —, secretion related to blood-pressure and pulse-pressure, xvi.
- Kymograph, xxxix.
- L ADD, W. E. See PORTER, FROTHING-
- Lecithin, effect on growth, 57.
- LEE, F. S. A new head holder for rabbits,
- Leucin, relation to sugar formation, 229. LEVENE, P. A. The end-products of selfdigestion of animal glands, xxxviii.
- LEVENE, P. A. The end-products of tryptic digestion of gelatine, xxxix.
- LEVENE, P. A., and L. B. STOOKEY. On the nucleoproteids of the brain, xliv.
- LILLIE, R. S. The relations of ions to ciliary movement, 419.
- LUSK, G. On the absence of a cane-sugar inverting enzyme in the gastric juice, xxi.
- LUSK, G. See MANDEL and LUSK, 47.
- LUSK, G. See STILES and LUSK, 67. Lymph, affected by hemorrhage, xxxi.
- M ACCALLUM, J. B. On the action of saline purgatives in rabbits and the counteraction of their effect by calcium, 101.
- MACCALLUM, J. B. On the local application of solutions of saline purgatives to the peritoneal surfaces of the intestine,
- MACALLUM, A. B. A method of demonstrating the localization of potassium in animal and vegetable cells, xliii.

- McGuigan, H. The relation between the decomposition-tension of salts and their antifermentative properties, 444
- Mandel, A. R. The alloxuric bases in aseptic fevers, 452.
- MANDEL, A. R., and G. LUSK. Respiration experiments in phlorhizin diabetes, 47.
- MANT, S. O. Reactions to temperature changes in Spirillum, Hydra, and freshwater Planarians, 165.
- MATHEWS, A. P. The relation between solution-tension, atomic volume, and the physiological action of the elements, 290.
- MELTZER, S. J. Demonstration of rabbit's nerves, showing the effect of ligation upon vital staining, xxiv.
- MELIZER, S. J. The effects of a subcutaneous injection of adrenalin on the eyes of cats whose sympathetic nerve is cut, or whose superior cervical ganglion is removed, xxxvii.
- MELTZER, S. J. Demonstration of the effects of subcutaneous mjection or subconjunctival instillation of adrenalin upon the pupils of rabbits whose corresponding superior cervical ganglia are removed,
- MENDEL, L. B., and R. B. GIBSON. Nitrogenous metabolism after splenectomy, xxix.
- MENDEL, L. B. See OSBORNE and MEN-DEL, XXXVI.
- Metabolism, diet and cage for dogs, xxii.
- —, proteid, 115.
  —, proteid, affected by hemorrhage, xxviii.
- , proteid, after splenectomy, xxix.
- Milk, influence of rennin on digestion of proteid, 37.
- MILNER, R. D. See BRYANT and MILNER, 81.
- MURBACH, L. The static function in Gonionemus, 201.
- Muscle tone, 211, 373, xliv.
- Muscle warmer, xliii,
- Muscular exercise, blood, 384.
- N EILSON, H. The hydrolysis and synthesis of fats by platinum black,
- NEILSON, C. H., and O. H. BROWN. The effects of ions on the decomposition of hydrogen peroxide by platinum black,
- Neilson, C. H., and O. H. Brown. Effect of ions on the decomposition of hydrogen peroxide, and the hydrolysis of butyric

ether by a watery extract of pancreas,

Nerve, effect of ligation on staining, xxiv.

, irritability after removal from body,
xi.

---, impulse, rate, 401.

Nitrogen, excretion following small increase in proteid ingestion, 269.

Nucleo-proteids of brain, xliv.

OSBORNE, T. B., and L. B. MENDEL. Ricin, xxxvi.

Osseomucoid, distribution, 146.

PARKER, G. H. The skin and the eyes as receptive organs in the reaction of frogs to light, 28.

Phlorhizin diabetes, respiration, 47.

Phosphate, excretion following small increase in proteid ingestion, 269.

Physiological action of elements, relation to solution-tension and atomic volume, 200.

Pigmentation, 365.

Pilocarpine and atropine, simultaneous action, 352.

Poisons, antagonistic action, 352.

PORTER, W. T. An improved kymograph. xxxix.

PORTER, W. T. Respiration scheme, xlii. PORTER, W. T. "Muscle warmer," xliii.

PORTER, W. T., C. FROTHINGHAM, JR., and W. E. LADD. On co-ordination of the ventricles of the heart, xvi.

PORTER, W. T., and W. C. QUINEY. The condition of the vasoconstrictor neurons in "shock," xii.

PORTER, W. T. See STOREY and PORTER, xliv.

Posner, E. R., and W. J. Gies. The influence of hemorrhage on the formation and composition of lymph, xxxi.

Proceedings of the American Physiological Society, ix.

Proteid ingestion, small increase affects nitrogen, sulphate, and phosphate excretion, 260.

Proteid metabolism, time relations, 115. Pulse pressure, blood-pressure, and velocity

of blood-flow, xv.

Pulse-pressure and blood-pressure, relation
to kidney secretion, xvi.

Purgatives, counteracted by calcium, tot.

—, saline, application to peritoneum,
250.

Pylorus, mechanism, xvii.

QUINBY, W. C. See PORTER and QUINBY, xii.

R AREFIED air, blood-pressure, 149.
Rennin, influence on proteid digestion in milk, 37.

Respiration, phlorhizin diabetes, 47.

-, rarefied air, 149.

Respiration scheme, xlii.

Respiratory centre in the skate, 236. Ricin, xxxvi.

SALTS, decomposition-tension, and antifermentative properties, 444.

Schiedt, R. C. Some phenomena of animal pigmentation, 365.

SEIFERT, C., and W. J. GIES. On the distribution of osseomucoid, 146.

Shock, vaso-constrictor neurons, xii.

Skin, reaction to light, 28.

Sollmann, T. The simultaneous action of pilocarpine and atropine on the developing embryos of the sea-urchin and starfish. — A contribution to the study of the antagonistic action of poisons, 352, xliii.

SOLLMANN, T., and R. A. HATCHER. The physical factors concerned in urine formation, xxv.

Solution-tension, relation to atomic volume and physiological action, 200.

Sphygmomanometer, xiv.

Splenectomy, effect on proteid metabolism,

Static function in Gonionemus, 201.

STILES. P. G., and G. LUSK. On the action of phlorhizin, 67.

Stomach, emptying, xix.

—, passage of different food-stuffs, xvii.

STOOKEY, L. B. See LEVENE and STOOKEY, xliv.

STOREY, T. A., and W. T. PORTER. Further contributions to muscle tonus, viiv.

Sugar, formation, 229.

Sulphate, excretion following small increase in proteid ingestion, 260.

Suprarenal, enzyme, xxv.

Suprarenal grafting, with survival after removal of remaining suprarenal, xix.

TEMPERATURE, reactions in Spirillum, Hydra, and fresh-water Planarians, 165.

Thymus, enzyme, xxiv.

- UNDERHILL, F. P. Experiments on the precursors of urinary indican, xxvii.
- VAN BERGEN, C. See Busch and VAN BERGEN, xix.
- Vaso-constrictor neurons in shock, xii. Vegetables, digestibility, S1.
- WOODWORTH, R. S. Demonstration of expressive motions in a decerebrate animal, xliii.
- Z OETHOUT, W. D. The effects of various salts on the tonicity of skeletal muscles, 211.
- ZOETHOUT, W. D. On the production of contact irritability without the precipitation of calcium salts, 324.
- ZOETHOUT, W. D. Further experiments on the influence of various electrolytes on the tone of skeletal muscles, 373.



# THE AMERICAN

# JOURNAL OF PHYSIOLOGY

EDITED FOR

## The American Physiological Society

BY

H. P. BOWDITCH, M.D., BOSTON
R. H. CHITTENDEN, Ph.D., New Haven
W. H. HOWELL, M.D., BALTIMORE

PREDERIC S. LEE, Ph.D., New YORK
W. P. LOMBARD, M.D., ANN ARBOR
G. N. STEWART, M.D., CHICAGO

W. T. PORTER, M.D., BOSTON

Vol. X.-No. VII.

Issued March 1, 1904

BOSTON, U.S.A.
GINN AND COMPANY
1904

### CONTENTS.

Some Phenomena of Animal Pigmentation. By R. C. Schiedt	365
FURTHER EXPERIMENTS ON THE INFLUENCE OF VARIOUS ELECTRO- LYTES ON THE TONE OF SKELETAL MUSCLES. By W. D. Zoethout	373
EFFECTS OF CERTAIN SALTS ON KIDNEY EXCRETION, WITH SPECIAL REFERENCE TO GLYGOSURIA. By Orville Harry Brown	378
On the Morphological Changes in the Blood after Muscular Exercise. By P. B. Hawk	384
THE RATE OF THE NERVOUS IMPULSE IN THE SPINAL CORD AND IN THE VAGUS AND THE HYPOGLOSSAL NERVES OF THE CALIFORNIA HAGPISH (BDELLOSTOMA DOMBET). By A. J. Carlson	401
THE RELATION OF IONS TO CILIARY MOVEMENT. By Ralph S. Lillie	419
THE RELATION BETWEEN THE DECOMPOSITION-TENSION OF SALTS AND THEIR ANTIFERMENTATIVE PROPERTIES. By Hugh McGuigan	444
THE ALLOXURIC BASES IN ASEPTIC FEVERS. By Arthur R. Mandel .	452

THE AMERICAN JOURNAL OF PHYSIOLOGY is issued monthly. Each volume will contain about five hundred pages. The price of one volume sent postage free to subscribers in the United States and Canada is five dollars; to subscribers in other countries, five dollars and twenty-five cents (£1 2s.; marks, 22; francs, 27). The price of Volumes One, Two, and Three will be six dollars to domestic subscribers, and six dollars and twenty-five cents to foreign subscribers. All subscriptions are payable in advance.

Subscriptions, manuscript, and all other communications should be sent to Dr. W. T. PORTER, 688 Boylston Street, Boston, Mass., U.S.A.

Contributors will receive fifty copies of their papers free; additional copies may be obtained at cost.

The American Journal of Physiology is represented:

In America, by GINN & COMPANY, 9 Tremont Place, Boston, Mass.

In Germany, by R. FRIEDLANDER & SOHN, Berlin, N. W., Carlstrasse 11.

Copyright, 1904, by GINN & COMPANY.

Printed by John Wilson and Son, at The University Press, Cambridge, Mass.

Rulered at the Boston, Mass., Poss-Office as second-class mail matter, Reb. 23, 2001.

